

**Features**

- Quadrant APD Hybrid
- High QE for  $\lambda = 850-1064$  nm
- Low noise
- Low slope multiplication curve
- High-speed, low noise TIA

**Description**

Hybrid with transimpedance amplifier and IR - enhanced APD chip. Very low dark current due to guard ring diode. Metal can type hermetic TO8Si package.

**Application**

- Pulsed 1064 nm laser detection
- Laser range finding
- Laser guidance

**RoHS**

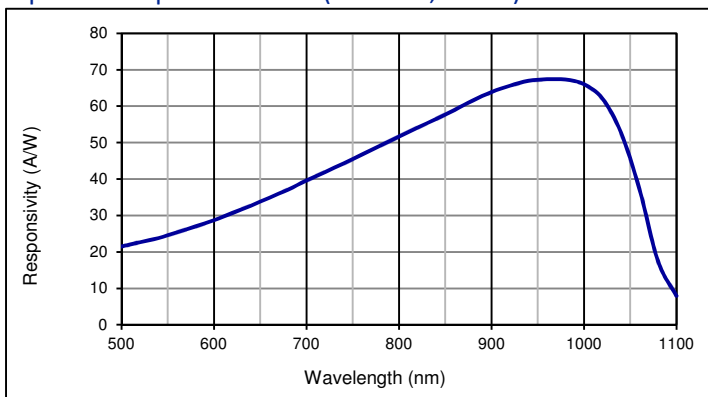
2002/95/EC



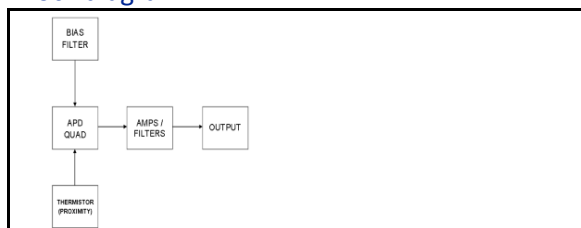
**Absolute maximum ratings**

Symbol	Parameter	Min	Max	Unit
T <sub>STG</sub>	Storage temp	-55	125	°C
T <sub>OP</sub>	Operating temp	-40*	85	°C
M <sub>max</sub>	Overall gain	2.4 E6		

**Spectral response of APD (M = 100; 23 °C)**



**Block diagramm**



**Electro-optical characteristics of APD chip @ 23°C**

Symbol	Characteristic	Test Condition	Min	Typ	Max	Unit
	No of elements			4		
	Active area	segmented in 4 quadrants		$\phi$ 4000		$\mu$ m
	Gap			110		$\mu$ m
I <sub>D</sub>	Dark current	M = 100; $\lambda = 905$ nm, per segment		7	75	nA
C	Capacitance	M = 100, per segment		4		pF
	Responsivity	M = 100; $\lambda = 1064$ nm		36		A/W
t <sub>R</sub>	Rise time	M = 100; $\lambda = 905$ nm; R <sub>L</sub> = 50 $\Omega$		5		ns
V <sub>BR</sub>	Breakdown voltage	I <sub>R</sub> = 2 $\mu$ A	220	300	600	V
	Temperature coefficient			3.3		V/K
	Photo current uniformity	M = 50		$\pm 5$		%
	Dark current uniformity	M = 50		$\pm 5$		%

\* please note that depending on operation voltage APD operation at temperatures below -15°C may require sophisticated control circuit.

**European, International Sales:**



First Sensor AG  
 Peter-Behrens-Strasse 15  
 12459 Berlin  
 Germany  
 T +49 30 6399 2399  
 F +49 30 639923-752  
 sales.opto@first-sensor.com

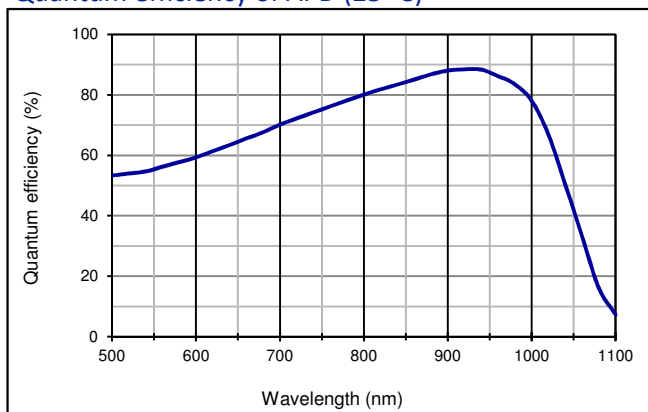
**USA:**



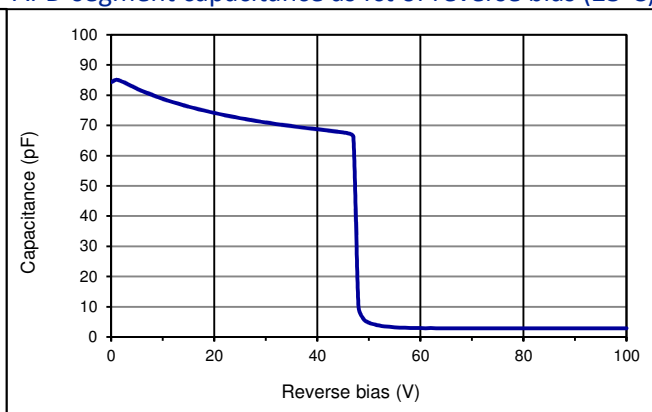
First Sensor Inc.  
 5700 Corsa Avenue #105  
 Westlake Village  
 CA 91362 USA  
 T +1 818 706 3400  
 F +1 818 889 7053  
 sales.us@first-sensor.com



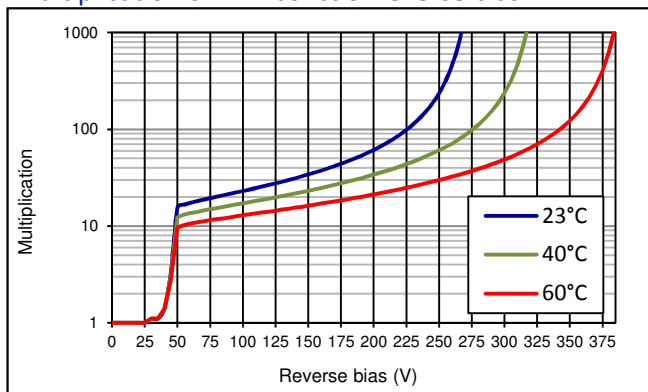
Quantum efficiency of APD (23 °C)



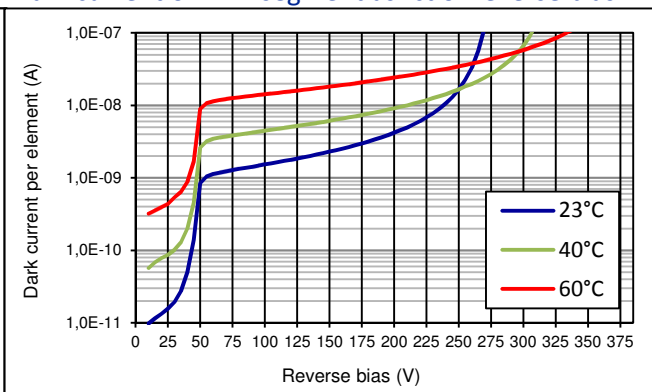
APD-segment capacitance as fct of reverse bias (23°C)



Multiplication of APD as fct of reverse bias



Dark current of APD-segment as fct of reverse bias



Characteristics of Hybrid @ 23°C

Part	Characteristic	Test Condition	Test Condition	Min	Typ	Max	Unit
Amplifier	Supply voltage			+/- 4.5	+/- 5	+/- 5.5	V
Amplifier	Supply current				50		mA
Amplifier	Transimpedance				12		kΩ
Amplifier	Output impedance				50		Ω
Amplifier	Differential output voltage					7 (+/-3.5)	V
Amplifier	Rise time		1 Volt Step		5		ns
Amplifier	Voltage noise		1 MHz		4.8		nV/√Hz
Amplifier	Current noise		1 MHz		1.3		fA/√Hz
Amplifier	Bandwidth		-3 db		68		MHz
Amplifier	Power supply rejection ratio				80		db
Amplifier	Offset voltage typical				+/- 0.25		mV
Amplifier	Coupling			AC (10 kHz min. signal frequency)			
Amplifier	Imput impedance				10E12		Ω
T-Diode	Thermistor resistance				10		kΩ

European, International Sales:

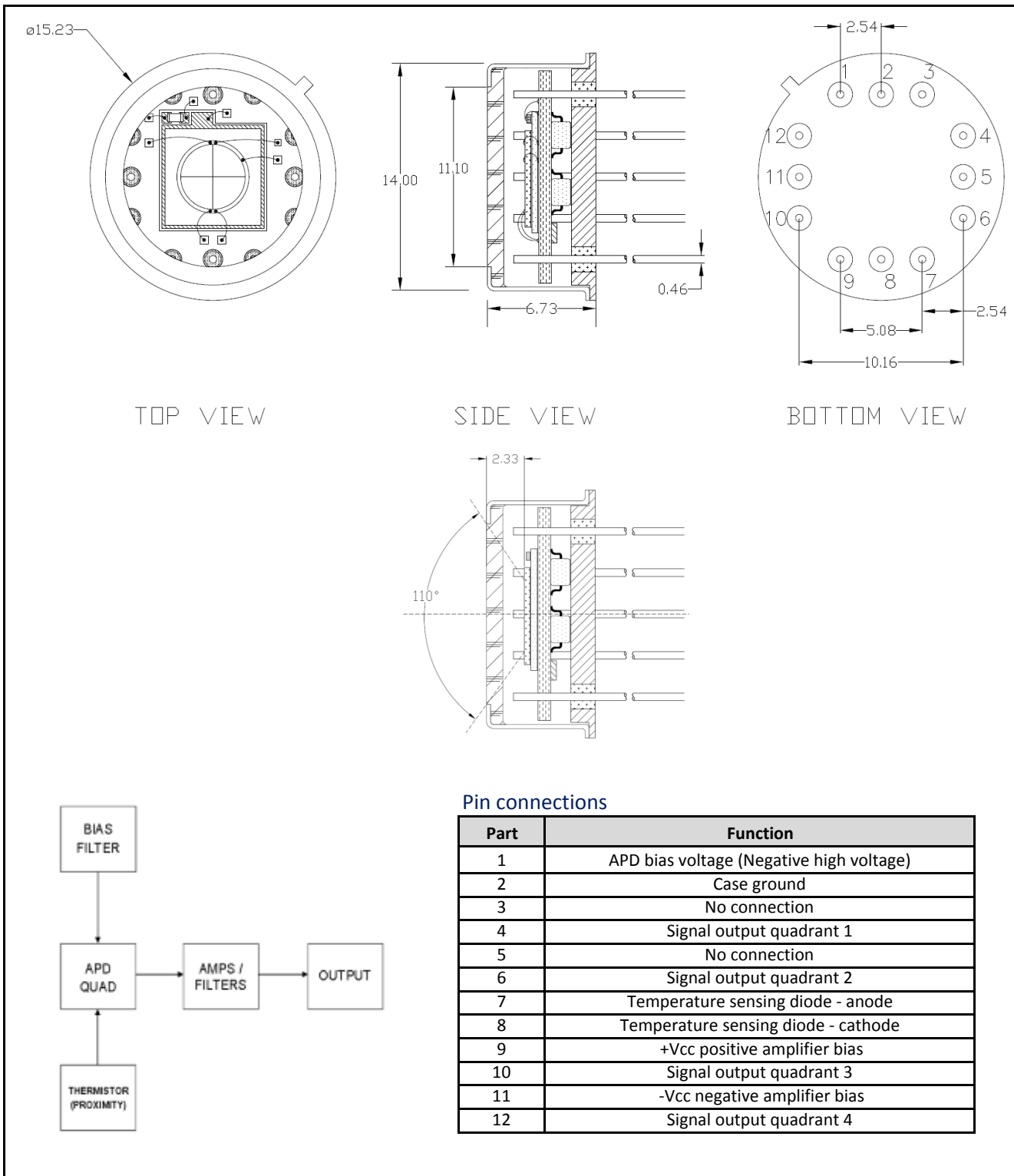


First Sensor AG  
 Peter-Behrens-Strasse 15  
 12459 Berlin  
 Germany  
 T +49 30 6399 2399  
 F +49 30 639923-752  
 sales.opto@first-sensor.com

USA:



First Sensor Inc.  
 5700 Corsa Avenue #105  
 Westlake Village  
 CA 91362 USA  
 T +1 818 706 3400  
 F +1 818 889 7053  
 sales.us@first-sensor.com



Disclaimer: Due to our strive for continuous improvement, specifications are subject to change within our PCN policy according to JESD46C.

**European, International Sales:**



First Sensor AG  
 Peter-Behrens-Strasse 15  
 12459 Berlin  
 Germany  
 T +49 30 6399 2399  
 F +49 30 639923-752  
 sales.opto@first-sensor.com

**USA:**



First Sensor Inc.  
 5700 Corsa Avenue #105  
 Westlake Village  
 CA 91362 USA  
 T +1 818 706 3400  
 F +1 818 889 7053  
 sales.us@first-sensor.com